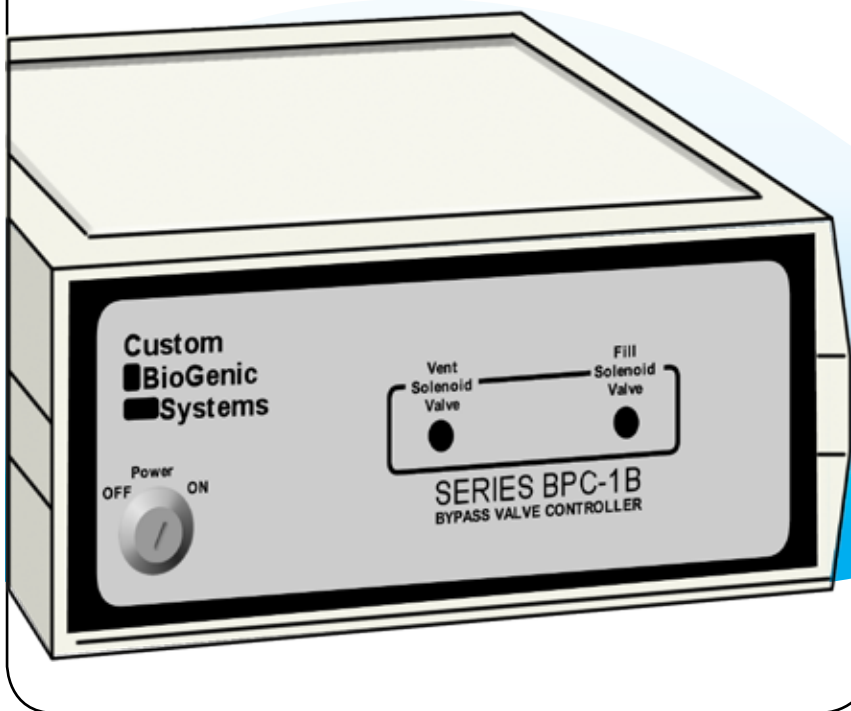


BPC-1B

BYPASS VALVE CONTROLLER

SET-UP AND TECHNICAL MANUAL



Custom
BioGenic
Systems

www.custombiogenics.com

150 Shafer Drive ♦ Romeo, MI 48065 ♦ USA

1.800.523.0072 ♦ Tel: 1.586.331.2600 ♦ Fax: 1.586.331.2588



Leading the World with Innovative Cryopreservation Technology Solutions

- IMPORTANT INFORMATION -

We at Custom Biogenic Systems are proud of our work, and appreciate your purchase of this product. With proper care, this equipment will be trouble free for many years to come. Before setting up and using your new cryogenic system, first check to see that all parts are accounted for and that no damage has occurred during shipping. Also, read this manual completely before proceeding to set-up. If at any time you are unsure of the procedures for set-up and use of this product, please contact Custom Biogenic Systems or your Custom Biogenic Systems representative.

PRODUCT WARRANTY

Custom BioGenic Systems warrants all manufactured cryogenic equipment to be free from defects in workmanship and materials for a period of one year. Custom BioGenic Systems' liabilities under the warranty shall be limited to correcting or replacing the defective workmanship or materials. A claimant under the warranty must notify CustomBioGenic Systems within ten (10) days after discovery of the defect and immediately discontinue use of the defective equipment. Custom BioGenic Systems reserves the right, at their discretion, to correct the defect(s) in the field without return shipment to Romeo, Michigan. This warranty does not cover defects on cryogenic equipment resulting from abusive handling and subsequent failure.

Serial Number _____

Model number _____

For Technical Assistance Call: 1.800.523.0072 (U.S. Only)

Phone: 586.331.2600 Fax: 586.331.2588

www.custombiogenics.com

- SAFETY -

IMPORTANT!

The following section on LIQUID NITROGEN SAFETY should be read carefully and followed completely, but is by no means a complete volume on the use of cryogenic liquids. All personnel should have a complete knowledge of the correct procedures, as well as the hazards of working with liquid nitrogen. Failure to do so could result in serious injury or death.

WARNING

LIQUEFIED GASES ARE EXTREMELY COLD LIQUIDS. LIQUID NITROGEN EXISTS AT -196°C. BECAUSE OF THESE TEMPERATURES, LIQUEFIED GASES WILL “BURN” IF THEY COME INTO CONTACT WITH SKIN. NEVER ALLOW DIRECT SKIN CONTACT WITH LIQUID NITROGEN OR SERIOUS BURNS WILL RESULT.

ALTHOUGH LIQUID NITROGEN ITSELF IS NON-TOXIC, WHEN RELEASED IN TO A CONFINED SPACE IT CAN DISPLACE OXYGEN CAUSING ASPHYXIATION. ENTERING AN OXYGEN DEFICIENT ROOM CAN CAUSE UNCONSCIOUSNESS WITHOUT WARNING. ALWAYS CHECK AIR QUALITY UPON ENTERING A ROOM WHERE CRYOGENIC LIQUIDS ARE BEING USED AND IF POSSIBLE, HAVE A RESPIRATOR AVAILABLE.

INTRODUCING EQUIPMENT WHICH IS AT ROOM TEMPERATURE INTO LIQUID NITROGEN IS ALWAYS SOMEWHAT HAZARDOUS. BEWARE OF SPLASHING AND “BOILING” WHICH MAY OCCUR. ALL PERSONNEL PERFORMING THESE OPERATIONS SHOULD BE FULLY INFORMED OF PROPER HANDLING PROCEDURES AND SHOULD ALWAYS WEAR A FACE SHIELD AND PROTECTIVE CLOTHING.

LIQUEFIED GASES SHOULD NEVER BE USED IN COMBINATION WITH OTHER SUBSTANCES WITHOUT KNOWING WHAT THE RESULT WILL BE. WHEN IN DOUBT, CONTACT A COMPETENT AUTHORITY.

HANDLING

Personnel handling liquefied gases should be thoroughly instructed as to the nature of these materials. Proper training is essential to safety and will ensure the accident-free use of this equipment.

Because of their low temperatures, liquefied gases will burn the skin much the same way as hot liquids can. For this reason, always wear the proper protective clothing when handling these materials. It is advised that during use, handlers of liquid nitrogen should protect themselves by wearing goggles or face shields, heavy rubber gloves large enough to allow quick removal and a heavy rubber apron. It is preferable that shoes worn at these times have high tops as to not permit accidentally spilled liquid from entering as well as pant legs which come down over the tops of shoes for further protection.

Also because of the extremely low temperatures, liquid nitrogen should only be handled and transported in approved containers. Many materials become brittle and may shatter when put into contact with liquid nitrogen and other cryogenic liquids.

FIRST AID

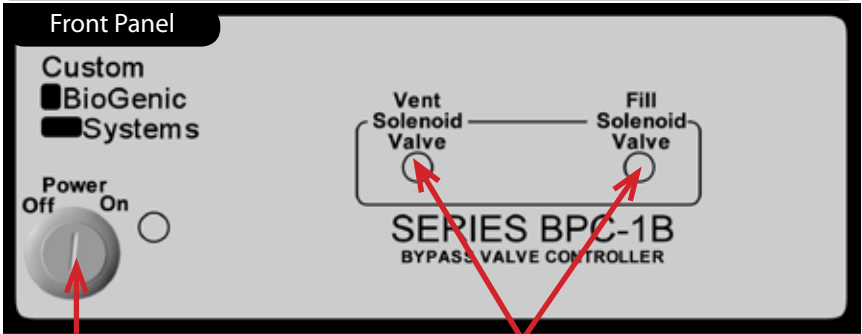
In the event a person is burned by liquefied gas, the following first aid treatment should be given while awaiting the arrival of medics or a doctor:

1. If the material has contacted skin or eyes, flood those areas with large quantities of unheated water and protect frozen areas with loose, bulky, dry and sterile dressings.
2. If the skin is blistered or there is a chance that the eyes have been affected, seek medical help immediately.

- BEFORE USE -

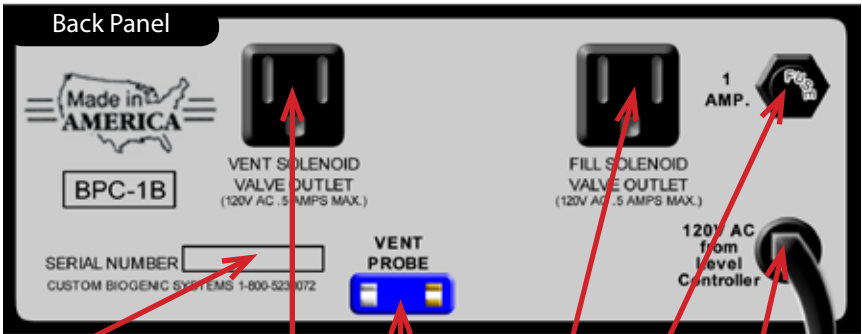
Caution: Do not plug in the AC power plug before completing initial set-up. Check to see that all parts are accounted for and are damage free.

- PARTS IDENTIFICATION -



Keyswitch Power Control

Solenoid Valve Activation Indicator Lights



Individual Serial Number

Vent Solenoid Valve Outlet

Vent Probe Connector Jack

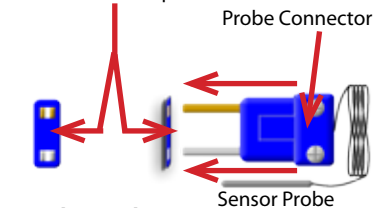
Fill Solenoid Valve Outlet

1 AMP Fuse

Power Cord Connection
Neutral (blue)
Ground (green)
AC Hot (brown)

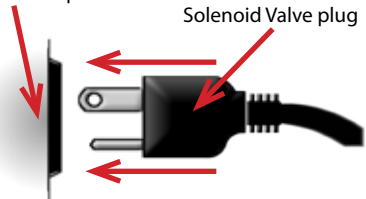
- PARTS IDENTIFICATION -

Probe Connector jack on BPC-1B back panel



Push into place (only goes one way)

Solenoid Valve outlet on unit back panel



Push into place (only goes one way)

- INSTALLATION & SETUP -

Note: Before beginning installation, be sure that power cords are unplugged from power sources and that LN2 supply valves are closed. Also, be sure a relief valve is installed to avoid LN2 pressure build-up.

When the fill and vent solenoid valves have been correctly installed into the LN2 lines or pipeline assembly, the BPC-1B may then be connected to the system using the following steps:

1. Secure probe in an appropriate position to accurately monitor temperature. **Note:** *it is important that the **tip** of the thermocoupler probe be positioned in the path of the LN2 flow to ensure proper equipment operation.*
2. Plug the fill and vent solenoid valves into the corresponding jacks on the unit back panel.
3. Plug probe connector into corresponding jack on unit back panel (see illustration on page 1)
4. Plug power cord into wall socket (120V AC/properly grounded); or if using with pre-existing controller, connect power cord to level control (splice wires together if necessary using illustration on page 1 to properly identify the wires).
5. Plug in and turn on level control (if applicable).
6. Turn BPC-1B key switch to the ON position.

- OPERATING PROCEDURE -

The BPC-1B vents LN2 vapor from the lines, so that the liquid will flow immediately through the fill valve, and not be delayed by vapor clearing the lines. When used on a pipeline system, the BPC-1B purges warm air from the pipeline to keep temperatures constant at the LN2 equipment.

- TROUBLESHOOTING GUIDE -

Use this chart to help correct any problems you may encounter. If further assistance is needed, contact a Custom Biogenic Systems representative.

Condition	Causes	Solutions
<ul style="list-style-type: none"> ◆ No Lights 	<ul style="list-style-type: none"> ◆ No power at wall outlet ◆ AC power cord not plugged in ◆ ON/OFF switch is in OFF position 	<ul style="list-style-type: none"> ◆ Use live power source ◆ Plug the power cord into a properly grounded outlet ◆ Move power switch into the ON position

- SUGGESTIONS FOR SAFETY -

NOTE: Liquid nitrogen can cause severe frostbite. Do not touch liquid nitrogen or frosted materials. Wear a face shield and gloves whenever possible.

- ◆ Nitrogen gas can cause suffocation quickly and without warning, do not use liquid nitrogen in confined areas without proper ventilation.
- ◆ Use caution when making electrical connections. Do not make electrical connections when hands and/or parts are wet.
- ◆ If unsure, contact qualified personnel rather than taking unnecessary risks.

- CLEANING AND MAINTENANCE -

- ◆ Clean unit with a mild, non-abrasive household cleaner.
- ◆ Visually check wires and connections for signs of wear, and to locate potential future problems
- ◆ Avoid exposing the unit to conditions that may cause damage or interrupt proper operation.
- ◆ The BPC-1B is intended to operate in the following environment:
- ◆ Indoor use only
- ◆ Installation Category II per IEC664
- ◆ Pollution Degree Level II per IEC61010-1
- ◆ Temperature: 10°C to 50°C operating per IEC61010-1
Humidity: Maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C.
- ◆ BPC-1B Power Requirements: 24V DC Power Supply. Use only power supply provided by Custom Biogenic Systems.

AVAILABLE FROM CBS

Liquid Nitrogen Equipment Including:

- Freezers & Dewars**
- Controlled Rate Freezing Systems**
- Freezer Racks and Boxes**
- Transfer Lines**
- Solenoid Valves**
- Liquid Level & Temperature Alarms**
- Liquid Level & Temperature Controls**
- Temperature Recorders / Monitors**
- Cryogenic Accessories**



**Custom
BioGenic
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**150 Shafer Drive
Romeo, Michigan 48065 U.S.A.**

BPC1B.TM0609

Revision: A

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